

REMARKS

Claims 2-15 are pending in this application. By this Amendment, claims 2-4, 6-12 and 14 are amended. Claim 15 is added. No new matter is added.

Entry of the amendments is proper under 37 C.F.R. §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration since the amendments amplify issues previously discussed throughout prosecution; (c) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (d) place the application in better form for appeal, should an appeal be necessary.

I. Interview Summary

Applicant appreciates the courtesies shown to Applicants' representative by Examiner Pham in the December 8, 2003 personal interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks. Specifically, claims 2-4, 6-12 and 14 are amended to comply with the Examiner's helpful suggestions made during the interview.

II. Information Disclosure Statement

An Information Disclosure Statement and Form PTO-1449 was filed on June 18, 2003. Applicant respectfully requests acknowledgment of receipt and consideration of the references listed thereon.

III. Claim Rejections Under 35 U.S.C. §112

Claims 6 and 9 are rejected under 35 U.S.C. §112, second paragraph. The rejection is respectfully traversed.

The Office Action alleges that the recitation of 180 degrees in the rejected claims does not clearly define whether electrical degrees or mechanical degrees are being recited.

Additionally, claims 6 and 9 are amended to more clearly recite a "mechanical angle" as discussed during the personal interview. Applicant submits that the determination of the "180 degrees" being recited in claims 6 and 9 is clear when read in light of the specification and the claims. For example, on page 9, lines 19-26, the specification describes the three connection ends 26A, 26B and 26C of the three phase-winding 23A distributed over an area wider than 180 degrees in angle so that the lead wires 27 that form the connection ends 26A, 26B and 26C may not overlap each other in the radial direction (see also Fig. 6). The specification goes on to recite that "thus, it is easy to connect the pair of three phase-windings 23A and 23B to shape the lead wires 27." Accordingly, the angle being described in the specification is a mechanical angle.

It should be noted that, as shown in Figs. 4 and 5 of the specification, that the armature winding 23 is cylindrical. Therefore, by distributing the three connection ends 26A, 26B and 26C over an area wider than 180 degrees in angle, connection of the lead wires is facilitated.

Additionally, as the term electric angle is clearly labeled when in use in the specification and claims, Applicant asserts that the meaning of the term 180 degrees in claim 6 and 9 is not indefinite. Accordingly, Applicant respectfully request the rejection of claims 6 and 9 under 35 U.S.C. §112, second paragraph, be withdrawn.

IV. Claim Rejection Under 35 U.S.C. §103(a)

Applicant appreciates Examiners Pham's telephone confirmation of November 11, 2003, that claims 2, 6, 7 and 14 are rejected under 35 U.S.C. §103(a), rather than under 35 U.S.C. §102(b) as set forth in the Office Action. Applicant traverses the rejection of claims 2, 6, 7 and 14 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 5,686,774 to Slavik et al. ("Slavik") in view of U.S. Patent No. 5,270,602 to Takehara.

Applicant asserts that neither Slavik nor Takehara, whether considered alone or in combination, disclose or suggest each and every feature recited in new independent claim 15, from which claims 2, 6, 7 and 14 depend. For example, the combination of references does not disclose or suggest a rotary electric machine including a cylindrical stator core having an axial end surface, an armature winding mounted in the stator core, the armature winding having a first group of Δ -connected three phase-windings having junctions that are $2\pi/3$ in electric angle different from each other and a second group of three-phase windings having output ends that are $2\pi/3$ in electric angle different from each other and input ends respectively connected in series to the junctions of the first group, wherein in each junction of the first group and one of the input ends of the second group connected thereto is disposed on the axial end surface to be widely spaced apart from another junction.

The Office Action admits that Slavik does not teach output ends of the Δ -connection windings distributed at an end surface of the stator, or in an angular range that is more than 180 degrees. To overcome the admitted deficiency the Office Action combines Takehara with Slavik and alleges that it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the winding of Slavik as taught by Takehara.

The Office Action alleges that Takehara suggests a Δ -connection winding having output ends (r, p, q) distributed at an end of the stator core in an angular range that is more than 180 degrees (see Fig. 5 of Takehara). However, Fig. 5 of Takehara merely shows a coil block arrangement diagram (schematic representation) which does not show a positional relationship between the coil blocks and the stator core. The intermediate tabs (p, q, r) only schematically represent junctions of the coils and do not correspond to the junctions of the first group of the phase-windings, as recited in the rejected claims. Additionally, the

intermediate tabs (p, q, r) are not connected to input ends of another group of phase-windings that are series connected thereto.

Regarding claim 6, neither Slavik or Takehara, whether considered alone or in combination, disclose or suggest a rotor electric machine wherein junctions of the first group are distributed at the axial end surface of the stator core in an axial range that is more than 180 degrees. As stated above, Takehara does not show a positional relationship between the coil blocks and the stator core but rather only schematically represents the junctions and therefore does not disclose junctions of first group of three phase-windings distributed at an axial end surface of the stator core in an angular range that is more than 180 degrees.

As stated above, regarding the rejections under 35 U.S.C. §112, the stator windings recited in the claims are formed in a cylindrical shape. Thus, a schematic representation as shown in Fig. 5 of Takehara cannot provide the positional relationship as alleged in the Office Action.

Regarding claim 2, the combination of references does not disclose or suggest the rotor electric machine of claim 15, wherein each of the three phase-windings is mounted in the stator core so that the phase of current flowing in one phase-winding is $\pi/6$ radian in electric angle different from the phase of current flowing in another phase-winding mounted adjacent thereto.

Claims 4, 5, 8-10, 12 and 13 are rejected under 35 U.S.C. §103(a) as unpatentable over Slavik and Takehara in view of U.S. Patent No. 5,936,326 to Umeda et al. ("Umeda"). The rejection is respectfully traversed.

Applicant asserts that claims 4, 5 and 8 are allowable for at least their dependency on new independent claim 15 for the reasons described above, as well as for the additional features recited therein.

Regarding claims 9, 10, 12 and 13, Applicant asserts that neither Slavik, Takehara or Umeda, whether considered alone or in combination, disclose or suggest the features recited in the rejected claims. For example, the combination of references does not disclose or suggest a rotary electric machine comprising *inter alia* a stator including stator core and a three-phase winding mounted in the stator core...wherein the armature winding has a first group of Δ -connected three-phase windings having junctions that are $2\pi/3$ in electric angle different from each other and a second group of three-phase windings having output angles that are $2\pi/3$ in electric angle different from each other and input ends respectively connected in series to the junction of the first group and the junctions of the Δ -connection windings are distributed at an end surface of the stator core in an annular range that is more than 180 degrees.

The Office Action admits that the combination of Slavik and Takehara does not disclose the rotor electric machine comprising a stator including a stator core and a three-phase armature winding mounted in the stator core, a rotor having a plurality of magnetic poles and a rectifier unit. To overcome the admitted deficiency, the Office Action combined Umeda with Slavik and Takehara and alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the structure of the combination of Slavik and Takehara as taught by Umeda.

Applicant asserts that even were Umeda combined with Slavik and Takehara, the combination of references does not disclose or suggest the additional features recited in amended claim 9. Specifically, the combination of references does not disclose the armature winding having a first group of Δ -connected phase windings having junctions that are $2\pi/3$ in electric angle different from each other and a second group of three-phase windings having

output ends that are $2\pi/3$ in electric angles that are different from each other and input ends respectively connected in series to said junctions of said first group.

Accordingly, Applicant respectfully request the rejection of claims 4, 5, 8-10, 12 and 13 under 35 U.S.C. §103(a) be withdrawn.

Claims 3 and 11 are rejected under 35 U.S.C. §103(a) as unpatentable over the combination of Slavik and Takehara and further in view of U.S. Patent No. 4,144,470 to Auinger. The rejection is respectfully traversed.

Applicant asserts that claims 3 and 11 are allowable for their dependency on respective base claims for the reasons discussed above, as well as for the additional features recited therein. Accordingly, Applicant respectfully requests the rejection of claims 3 and 11 under 35 U.S.C. §103(a) be withdrawn.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted


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Attachment:

Notice of Appeal to the Board of Patent Appeals
and Interferences and Petition for Extension of Time

Date: December 12, 2003

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